



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Tomoya HIDAKA et al.

Application No.: 10/089,131 Group Art Unit: 1621

Filed: March 25, 2002

Examiner: S. KUMAR

For: PHENOL COMPOUNDS AND RECORDING MATERIALS USING THE  
SAME

DECLARATION UNDER 37 CFR §1.132

COMMISSIONER FOR PATENTS

PO Box 1450

Alexandria

Virginia 22313-1450

Sir:

I, Tomoya HIDAKA, hereby declare and state that:

1. I am a citizen of Japan, residing at 6-401 Nissosyataku, 2-4 Yusyudaihigashi, Ichihara-shi, Chiba-ken, Japan.
2. I am one of the inventors of the subject application, and I am fully familiar with the subject matter thereof as well as the reference relied upon by the Examiner in the prosecution of this application.
3. I obtained a degree in Industrial Chemistry from the Ibaraki Prefectural Mito Industrial High School in March 1974.
4. I am currently employed by Nippon Soda Co., Ltd., and began working for Nippon Soda Co., Ltd. in April 1974, where I have engaged in research on the development of phenol compounds and recording materials.
5. I have read the Official Action mailed July 7, 2004, and the Tsuchiya (US 4,988,662) patent cited therein. I note that the Examiner implies that an improper comparison

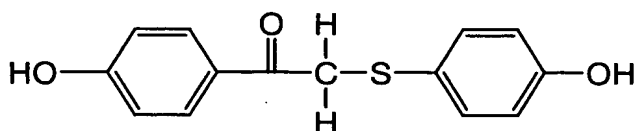
may have been previously submitted in Applicant's communication of April 12, 2004, and that he prefers that the comparison be submitted in the form of a Rule 132 Declaration. In order to provide further demonstration of the lack of obviousness propounded in the cited reference and to explain for the benefit of the Examiner the problems not solved until the present invention, I submit the following comparison data and comments for the Examiner's consideration.

### I. Object

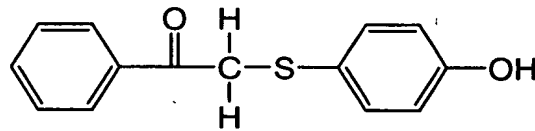
With regard to the reference (U.S. Patent No. 4,988,662 granted to Tsuchiya et al.) which was cited in the Office Action (dated July 7, 2004) issued for the present application (U.S. Patent Application, No. 10/089,131), tests were conducted to prove that the compounds of the applicant's invention have excellent properties which are significantly different from the compounds of Tsuchiya et al., and to ascertain the presence of patentable differences between the present and patented inventions.

### II. Tests

1) The compound No.75 of the U.S. Patent No. 4,988,662 (Tsuchiya et al.) was prepared by reproducing Example 36 of Tsuchiya et al. This compound No. 75 of the reference and Compound No. I-106 of the present invention were used in the Comparative Experiment.



Compound No. I-106



Reference Compound

Since the compounds of the present invention are used as a developer whereas the compounds of the reference are used as a sensitizer, we practiced the following Comparative Experiment to prove the fact that the compound of the present invention is a better developer than the compound of the reference.

### Comparative Experiment:

#### Example 1 (Preparation of Thermal Recording Papers):

##### Dye dispersion (A solution)

3-di-n-butylamino-6-methyl-7-anilino-fluoran	16 parts
10% aqueous solution of polyvinyl alcohol	84 parts

##### Developer dispersion (B solution)

4'-hydroxy-2-(4-hydroxyphenylthio)acetophenone (Compound No. I-106)	16 parts
10% aqueous solution of polyvinyl alcohol	84 parts

##### Filler dispersion (C solution)

Calcium carbonate	27.8 parts
10% aqueous solution of polyvinyl alcohol	26.2 parts
Water	71 parts

All components for each of A solution, B solution and C solution shown above were mixed and thoroughly ground by using a sand grinder, respectively, to prepare each dispersed solutions of A to C. 1 part by weight of A solution, 2 parts by weight of B solution and 4 parts by weight of C solution were mixed to prepare a coating solution. The coating solution was coated onto a white paper by using a wire rod (No. 12) and then dried. The coated paper was then subjected to calendaring to prepare a thermal recording paper. (The amount of the coating solution based on the dry weight was approximately 5.5 g/m<sup>2</sup>.)

#### Comparative Example 1:

A thermal recording material was prepared according to the same procedure as described in Example 1, except that 2-(4-hydroxyphenylthio)acetophenone (Reference Compound) was used in place of the developer (Compound No. I-106).

### III. Test Results

#### Test Example 1 (Lightfast Test):

Each of the thermal recording papers prepared in Example 1 and Comparative Example 1 were recorded to the saturated state by using Thermal Recording Paper Color Forming Testing Apparatus (manufactured by Okura Denki Co., Ltd., Type: TH-PMD). The images were subjected to lightfast tests where a lightfast testing apparatus (Ultraviolet Radiation Long Life Fade Meter, Type: FAL-5, manufactured by Suga Shikenki Co., Ltd.) was employed for the measurement. The densities of the tested images after 48 hours were measured. The results are shown in Table 1.

Table 1

	Image	
	Original	Lightfastness
Example 1	1.23	1.08 < 88 >
Comparative Example 1	0.89	0.65 < 73 >

※ Figures indicated in Table 1 denote Macbeth values, and the figures in < > denote residual image ratio.

### IV. Conclusion

As indicated in the results shown in Table 1 above, it is obvious that the "Compound No. I-106" of the present invention has a higher original concentration of the image and more excellent lightfastness exceeding that of the "Reference Compound". Therefore, the present invention is not obvious to one of ordinary skill in the art.

We believe that it is proven that the compounds of the applicant's invention have properties which are significantly different from the compounds of Tsuchiya et al. by the above tests, and that patentable differences do exist between the present invention and the invention of Tsuchiya et al.

6. I understand fully the content of this declaration.

7. The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

8. Further declarant saith not.

Tomoya Hidaka  
Tomoya HIDAKA

September 30, 2004  
Date